

ABSTRACT

A substrate processing apparatus has a process chamber with a substrate support, a gas supply to introduce a gas into the chamber, and a gas energizer to energize the gas in the processing of a substrate, thereby generating an effluent gas. A catalytic reactor has an effluent gas inlet to receive the effluent gas and an effluent gas outlet to exhaust treated effluent gas. A heater is adapted to heat the effluent gas in the catalytic reactor. The heated catalytic treatment of the effluent gas abates the hazardous gases in the effluent. An additive gas source and a prescrubber may also be used to further treat the effluent.